

IN THE CLAIMS

1. (Withdrawn) A display system for presenting a stereoscopic image to an observer, the display system comprising:
 - a plurality of cameras, each camera being configured to obtain a video image;
 - a video processor configured to receive the video images from each of the plurality of cameras and to formulate image data therefrom; and
 - a stereoscopic display having a left module and a right module, wherein each of the left and right modules comprises an eyepiece, a display panel, and a respective aperture located between the eyepiece and the display panel, wherein the stereoscopic display is configured to receive the image data from the video processor and to produce stereoscopic image points on the display panels as a function thereof, and wherein, for each of the left and right modules, the aperture is configured to form a window obscuring at least a portion of the stereoscopic image from the observer.
2. (Withdrawn) The display system of claim 1 wherein the stereoscopic display is a head-mounted display (HMD).
3. (Withdrawn) The display system of claim 1 wherein, for each of the left and right modules, the aperture is located substantially midway between the eyepiece and the display panel.
4. (Withdrawn) The display system of claim 1, wherein the video image comprises a convergence point corresponding to the intersection of centerlines projecting from each of the plurality of cameras.
5. (Withdrawn) The display system of claim 1 wherein the stereoscopic display comprises a display convergence point corresponding to the intersection of centerlines projecting from the left and right modules.

6. (Withdrawn) The display system of claim 5 wherein the stereoscopic display comprises a focus point at a location distinct from the display convergence point.

7. (Withdrawn) A display system for presenting a stereoscopic image to an observer, the display system comprising:

a plurality of cameras, wherein each of the plurality of cameras is configured to obtain a video image;

a video processor configured to receive the video images from each of the plurality of cameras and to formulate image data therefrom; and

a head-mounted stereoscopic display having a left module and a right module oriented toward a display convergence point, wherein each of the left and right modules comprises an eyepiece, a display panel, and a respective aperture located between the eyepiece and the display panel, wherein the stereoscopic display is configured to produce the stereoscopic image on the display panels as a function of the image data, wherein the stereoscopic image comprises a focus point distinct from the display convergence point, and wherein, for each of the left and right modules, the aperture is configured to form a window obscuring at least a portion of the stereoscopic image from the observer to thereby eliminate frame violations in the stereoscopic image.

8. (Withdrawn) The display system of claim 7 wherein each of the plurality of cameras are oriented toward each other at a camera convergence angle.

9. (Withdrawn) The display system of claim 8 wherein the left and right modules are oriented toward each other at a display convergence angle substantially equal to the camera convergence angle.

10. (Withdrawn) The display system of claim 9 wherein the display and camera convergence angles are substantially equal to nine degrees.

11. (Currently Amended) A method of producing a stereoscopic image of a scene on a stereoscopic display for an observer, the method comprising the steps of:

obtaining a left video signal and a right video signal ~~at least two video signals~~ of the scene;

processing the left video signal and the right video signal ~~at least two video signals~~ to generate left stereoscopic image data and right stereoscopic image data;

displaying ~~the~~ a left stereoscopic image on the stereoscopic display such that the left stereoscopic image appears at a viewing surface; ~~and~~

displaying a right stereoscopic image on the stereoscopic display such that the right stereoscopic image appears at the viewing surface; and

obscuring at least a portion of the left stereoscopic image ~~display~~ from the observer with a left aperture located between a left eyepiece and the stereoscopic display, and obscuring at least a portion of the right stereoscopic image from the observer with a right aperture located between a right eyepiece and the stereoscopic display, ~~mid-window~~ to thereby prevent frame violation effects in the stereoscopic image, such that displayed objects intended to appear ~~appearing~~ in front of the viewing surface are not blocked by an edge of a display frame.

12. (Original) The method of claim 11 wherein the stereoscopic display comprises left and right modules having a display convergence point corresponding to the intersection of centerlines projecting from the left and right modules.

13. (Original) The method of claim 12 wherein the processing step comprises generating a focus point for the stereoscopic image that is distinct from the display convergence point.

14. (Currently Amended) The method of claim 11 wherein the left video signal ~~each of the at least two video signals~~ is produced by a left camera, and the right video signal is produced by a right camera ~~one of a plurality of cameras~~.

15. (Currently Amended) The method of claim 14 wherein the left camera and the right camera ~~are plurality of cameras~~ is configured with a convergence point for the left video signal and the right video signal ~~at least two video signals~~.

16. (Currently Amended) The method of claim 15 wherein the convergence point is located closer to the left camera and the right camera ~~plurality of cameras~~ than a closest object appearing in the scene.

17. (Withdrawn) An aerial refueling system for assisting an operator in controlling a refueling boom coupled to an aircraft, the aerial refueling system comprising:

a remote vision system having at least two cameras, each configured to provide a video image of the refueling boom;

a video processing system is configured to receive the video images from each of the plurality of cameras and to formulate image data therefrom; and

a stereoscopic display having a left module and a right module, wherein each of the left and right modules comprises an eyepiece, a display panel, and a respective aperture located between the eyepiece and the display panel, wherein the stereoscopic display is configured to receive the image data from the video processing system and to produce the stereoscopic image on the display panels as a function thereof, and wherein, for each of the left and right modules, the aperture is configured to form a window obscuring at least a portion of the stereoscopic image from the operator to thereby reduce frame violations in the stereoscopic image.

18. (Withdrawn) An aerial refueling system for assisting an operator in controlling a refueling boom providing fuel to a receiving aircraft, the aerial refueling system comprising:

a remote vision system having at least two cameras configured to provide a video image having a field of view incorporating the refueling boom and at least a portion of the receiving aircraft, wherein the at least two cameras are oriented toward a convergence point corresponding to a point where the refueling boom intersects an edge of the field of view;

a video processing system configured to receive the video image and to formulate image data therefrom; and

a head-mounted stereoscopic display having a left module and a right module oriented toward a display convergence point, wherein each of the left and right modules comprises an eyepiece, a display panel, and a respective aperture located between the eyepiece and the display panel, wherein the stereoscopic display is configured to produce a stereoscopic image of the refueling boom and the portion of the receiving aircraft on the display panels as a

function of the image data, and wherein, for each of the left and right modules, the aperture is configured to form a window obscuring at least a portion of the stereoscopic image from the user.

19. (Withdrawn) The aerial refueling system of claim 18 wherein the stereoscopic image comprises a focus point distinct from the display convergence point.

20. (Withdrawn) The aerial refueling system of claim 17 wherein the stereoscopic display comprises a head mounted display (HMD).

21. (Withdrawn) A display for presenting a stereoscopic image to an operator, the display comprising a left module and a right module, wherein each of the left and right modules comprises an eyepiece, a display panel, and a respective aperture located between the eyepiece and the display panel, wherein the display is configured to receive image data and to produce the stereoscopic image on the display panels as a function thereof, and wherein, for each of the left and right modules, the aperture is configured to form a window obscuring at least a portion of the stereoscopic image from the observer.

22. (Withdrawn) A head-mounted stereoscopic display for presenting a stereoscopic image to an observer, the display comprising a left module and a right module oriented toward a display convergence point, wherein each of the left and right modules comprises an eyepiece, a display panel, and a respective aperture located between the eyepiece and the display panel, wherein the stereoscopic display is configured to produce the stereoscopic image on the display panels, wherein the stereoscopic image comprises a focus point distinct from the display convergence point, and wherein, for each of the left and right modules, the aperture is configured to form a window obscuring at least a portion of the stereoscopic image from the observer to thereby eliminate frame violations in the stereoscopic image.

23. (Withdrawn) A display for presenting a stereoscopic image to an operator, the display comprising a display panel and at least one aperture located between the display panel and the operator, wherein the display is configured to produce the stereoscopic image on the

display panel and wherein the at least one aperture is configured to form a window obscuring at least a portion of the display panel from the observer to thereby eliminate frame violations in the stereoscopic image.

24. (Currently Amended) A method of producing a stereoscopic image of a scene on a stereoscopic display for an observer, the method comprising the steps of:

obtaining a left video signal and a right video signal ~~at least two video signals~~ of the scene;

processing the left video signal and the right video signal ~~at least two video signals~~ to generate left stereoscopic image data and right stereoscopic image data;

displaying ~~the~~ a left stereoscopic image on ~~the~~ a left stereoscopic video display; ~~such that the stereoscopic image appears at a viewing surface; and~~

displaying the right stereoscopic image on a right stereoscopic video display;

blocking ~~obscuring~~ at least a portion of the perimeter of the left stereoscopic video display from the observer with a left aperture located between a left eyepiece and the left stereoscopic video display, and blocking at least a portion of the perimeter of the right stereoscopic video display from the observer with a right aperture located between a right eyepiece and the right stereoscopic video display ~~mid-window~~ to thereby prevent blocking of a first displayed object in the stereoscopic image ~~that appears in front of the viewing surface by another~~ a second displayed object in the stereoscopic image that is intended to appear ~~appears~~ behind the first displayed object.

25. (Currently Amended) A method of producing a stereoscopic image of a scene on a stereoscopic display for an observer, the method comprising the steps of:

obtaining a left video signal and a right video signal ~~at least two video signals~~ of the scene;

processing the left video signal and the right video signal ~~at least two video signals~~ to generate left stereoscopic image data and right stereoscopic image data;

displaying ~~the~~ a left stereoscopic image on ~~the~~ a left stereoscopic display such that the left stereoscopic image appears at a stereoscopic viewing surface and within a stereoscopic viewing window having a perimeter; ~~and~~

displaying a right stereoscopic image on a right stereoscopic display such that the right stereoscopic image appears at the stereoscopic viewing surface and within the stereoscopic viewing window; and

obscuring at least a portion of the perimeter of the left stereoscopic display from the observer with a left aperture located between a left eyepiece and the left stereoscopic display, and obscuring at least a portion of the perimeter of the right stereoscopic display from the observer with a right aperture located between a right eyepiece and the right stereoscopic display ~~mid-window~~ to thereby prevent frame violations in the stereoscopic image; wherein

frame violations occur when objects intended for display behind the stereoscopic viewing surface are displayed in a manner that makes the objects appear in front of the stereoscopic viewing surface.